

Abstract 558

TITLE: A Method for Estimating HIV Infection Probabilities for Individuals from Data on Multiple Sources of Behavioral Risk: An Application to HIV/STD Behavioral Research

AUTHORS: Wilson, SR; McLaughlin, DH; Shoumaker, WB; Brown, NL; Mejia, C

BACKGROUND/OBJECTIVES: Heterosexual HIV infection has increased among California Latinas. Investigation of self and partner characteristics that put women at risk required a measure of risk that considered both their own and their partners' behavior. Conventional indices (e.g., number of sexual partners) do not consider multiple sources or modifiers of risk.

METHODS: An algorithm was developed, applying standard probability methods, to use information on multiple dimensions of behavior (types of sexual partners, sexual practices, condom use consistency with different types of partners and practices, and needle sharing), plus current best estimates of HIV transmission rates and prevalences, to estimate an individual's probability of being infected. Estimated probabilities and their associations with conventional univariate risk indicators (number of partners, multiple partners [Y/N], sex with a man who has sex with men [Y/N], needle sharing [Y/N]), were examined for 399 couples from a large, area probability sample survey of California Latino couples.

RESULTS: Computed infection probabilities ranged from 0 to 0.23 for both genders, were somewhat higher for the females (mean = 0.0041 vs. 0.0038 for males; median = 0.000088 vs. 0.000075), were negatively skewed (9.0 and 8.5, respectively), and were significantly associated with conventional risk indicators. However, individuals with nominally identical risk based on any one conventional indicator varied substantially on other risk behaviors, a variation captured in their differing algorithm-generated infection probabilities. Regression trees (CART) used to examine the infection probabilities clearly illustrate their multidimensionality. The strongest predictor, shared needle use, shares variance with other indicators such as number of sexual partners and males' homosexual sex, in producing meaningful classes of infection risk. Mean infection probabilities based upon individuals' self-reported personal risk behaviors underestimated "actual" risk (i.e., mean risk inclusive of the partner's self-reported behavior) by 40-50%.

CONCLUSIONS: A multidimensional algorithm for estimating behavioral risk of HIV infection is feasible, intuitively appealing, and has potential application as an outcome measure in HIV and STD behavioral research. Validation and refinement of this approach using data on actual infection rates are needed.

PRESENTER CONTACT INFORMATION

Name: Sandra R. Wilson, Ph.D.

Address: PAMF Research Institute
860 Bryant St.
Palo Alto, CA 94301

Telephone: 650-853-2898

Fax: 650-329-9114

E-mail: wilsons@pamf.org